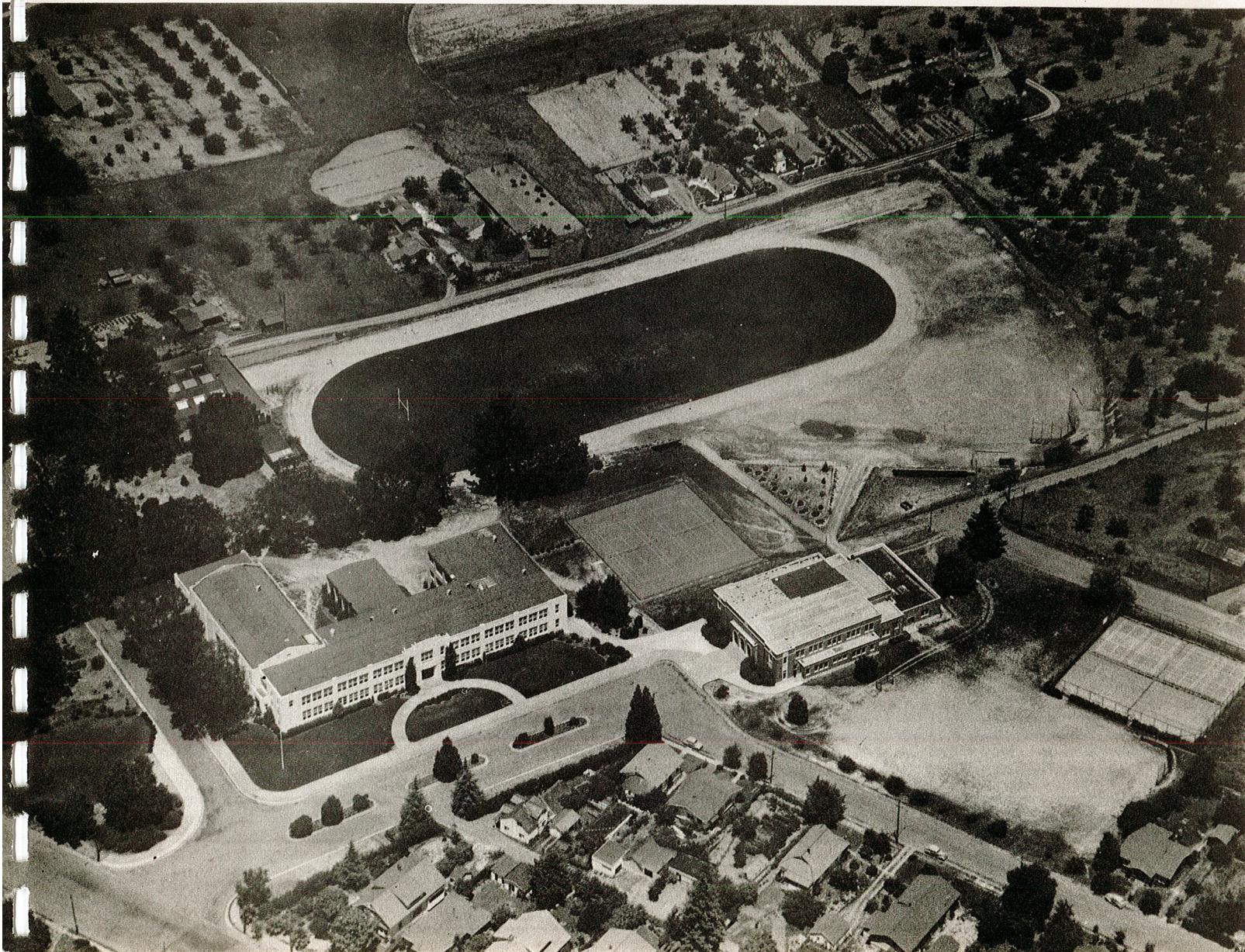


# **LONG RANGE BUILDING PROGRAM**

**ANALY UNION HIGH SCHOOL DISTRICT**

**SONOMA COUNTY, CALIFORNIA**



# **LONG RANGE BUILDING PROGRAM**

## **ANALY UNION HIGH SCHOOL DISTRICT SONOMA COUNTY, CALIFORNIA**

A Report of the  
**BOARD OF TRUSTEES**  
to  
**THE PEOPLE OF THE DISTRICT**

BURTON M. TRAVIS, President  
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# **ACKNOWLEDGMENT**

In assembling the source materials, information and data for this report of the Board of Trustees to the people of the District, many requests were made of various departments and officials. This Long Range Building Program is the result of the combined efforts of many whose fine spirit of cooperation and helpfulness was everywhere evidenced and whose assistance is gratefully acknowledged.

## **ANALY UNION HIGH SCHOOL DISTRICT**

*Lawrence A. Duffield, District Superintendent*

September 1948

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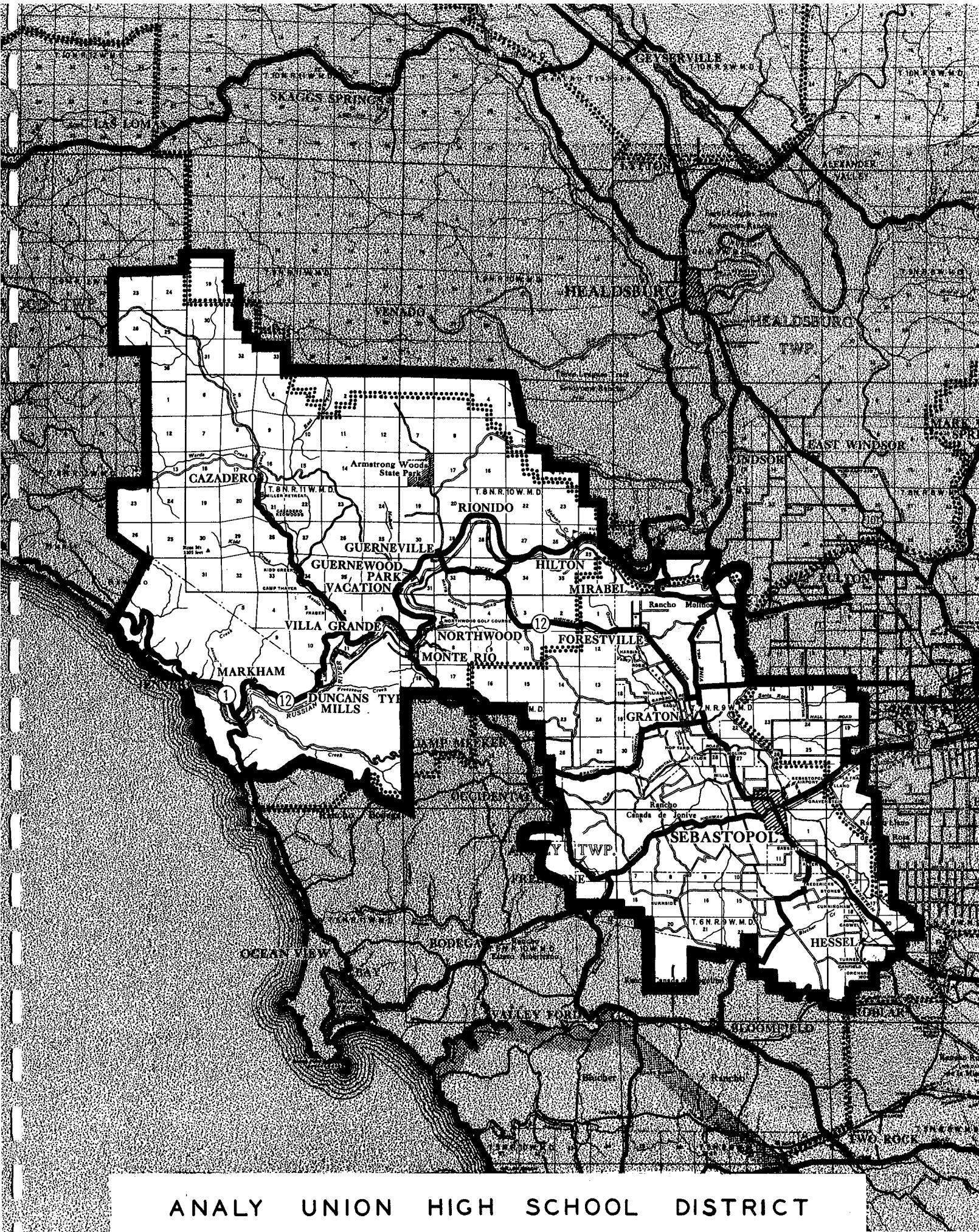
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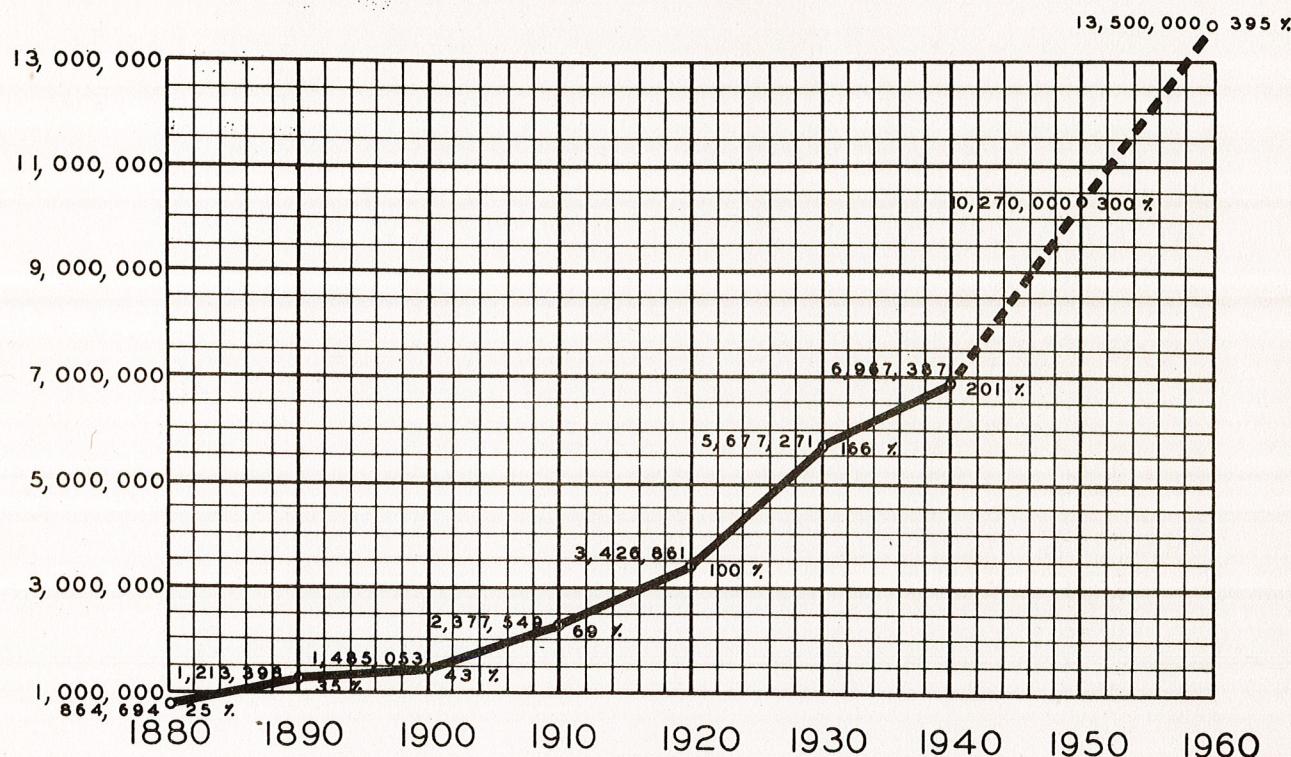
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ANALY UNION HIGH SCHOOL DISTRICT

FIG. I POPULATION TRENDS, STATE OF CALIFORNIA, AND  
PERCENT OF 1920 POPULATION



## CHAPTER II THE SCOPE OF THE PLANNING PROBLEM

### INTRODUCTION

What must we plan for in the future? Obviously one of the first and most important steps in sound long range school planning is a careful and exhaustive analysis of probable enrollments. Upon this determination rest many important decisions.

Fortunately, there exists a sufficient statistical basis from which we may derive a reasonably sound picture of the growth trends for a considerable future period. Population trends, birth rates, number of births, the records of the school district, social attitudes toward school attendance—these and other known factors lend themselves to the analysis.

### STATE POPULATION TRENDS

There is a wide spread belief that the present rapid growth in the population of California is simply a war and postwar phenomenon. While it is true that the war activities caused severe local fluctuations in the growth rate, the long term trend on a statewide basis was only slightly influenced by war activities. Examination of the long-term growth pattern in Figure I should serve to clarify our thinking on the growth of the state's population.

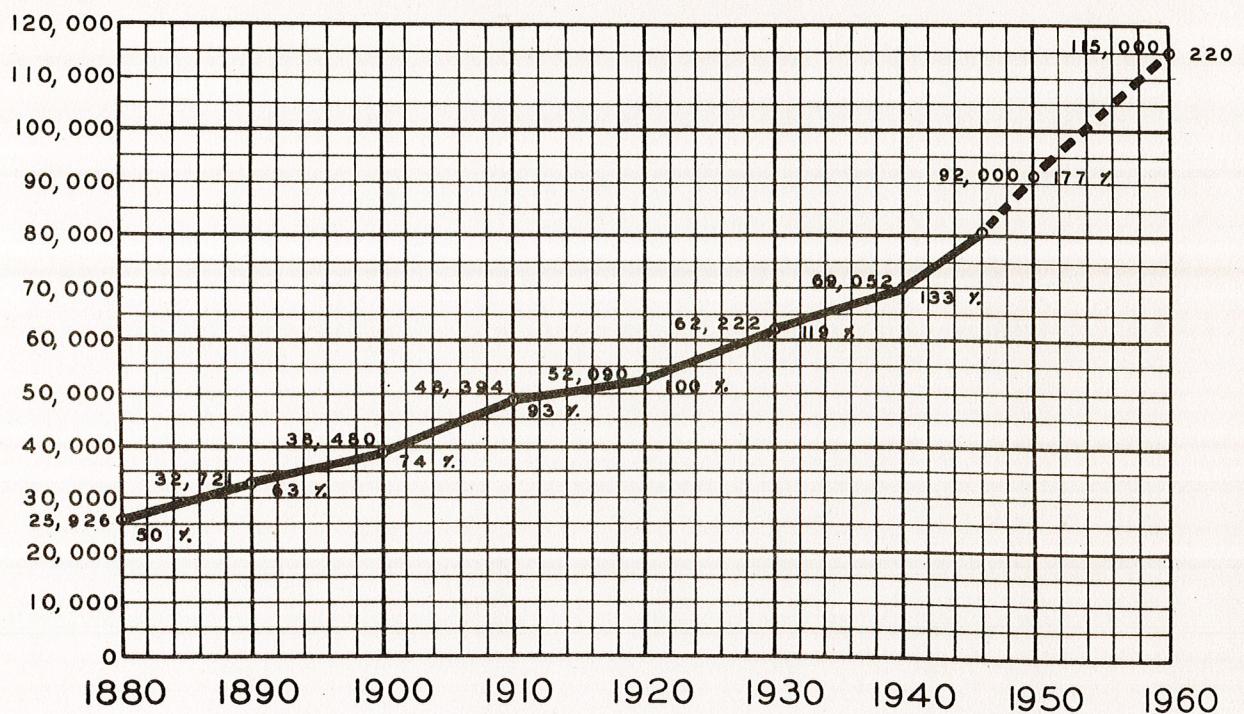
Since 1850, the year of the first California census, we find that there has been a long and continually rising curve of population increase. It is highly significant that the population of the state of California doubled in the twenty pre-war years from 1920 to 1940—years which included both boom times and depression times.

In partial answer to the question of "why?" a recently published report of population growth in California by the Commonwealth Club gave as factors which have entered into this long and continually accelerating growth, three basic causes which they have aptly called "push, pull and pathway." Factors are in operation in the east and middle west tending to push outward the population of these areas. The long time policy of advertising the advantages of living in California and the favorable impressions of thousands of visitors here has tended to pull population in this direction. The pathway in the form of transcontinental transportation—highways, railways and airlines—funnels the population migration toward this state. The three factors, push, pull and pathway, which have effected steady increases in the population of the state since 1850 are still in powerful operation and will probably continue to be effective for many years.

Contrary to the expectations of many and the hopes of some, even with the cessation of hostilities California's population has continued to grow at an accelerating pace. A Senate interim committee on housing issued the statement in January, 1948, that the state continues to gain in population at the rate of 6000 per week. Governor Warren in an address in the same month stated that the net gain in population of the state still exceeds 20,000 per month.

Estimates of the future growth of the state and of the individual counties have been made by the Reconstruction and Reemployment Commission. Without exception these estimates have been proven by time to be definitely on the conservative side. A census bureau report recently released gives the population as 9,876,000 as of July 1, 1947, and the latest reliable estimate indicates that the 10,000,000 mark was exceeded by January, 1948. At this rate we may expect to pass the 13,000,000 mark in ten years and current talk of 20,000,000 population in the state may not be entirely visionary. There is every reason to expect the state to continue its solid growth and this district has every right to believe that it will share in that growth.

FIG. II POPULATION GROWTH, SONOMA COUNTY, AND  
PERCENT OF 1920 POPULATION



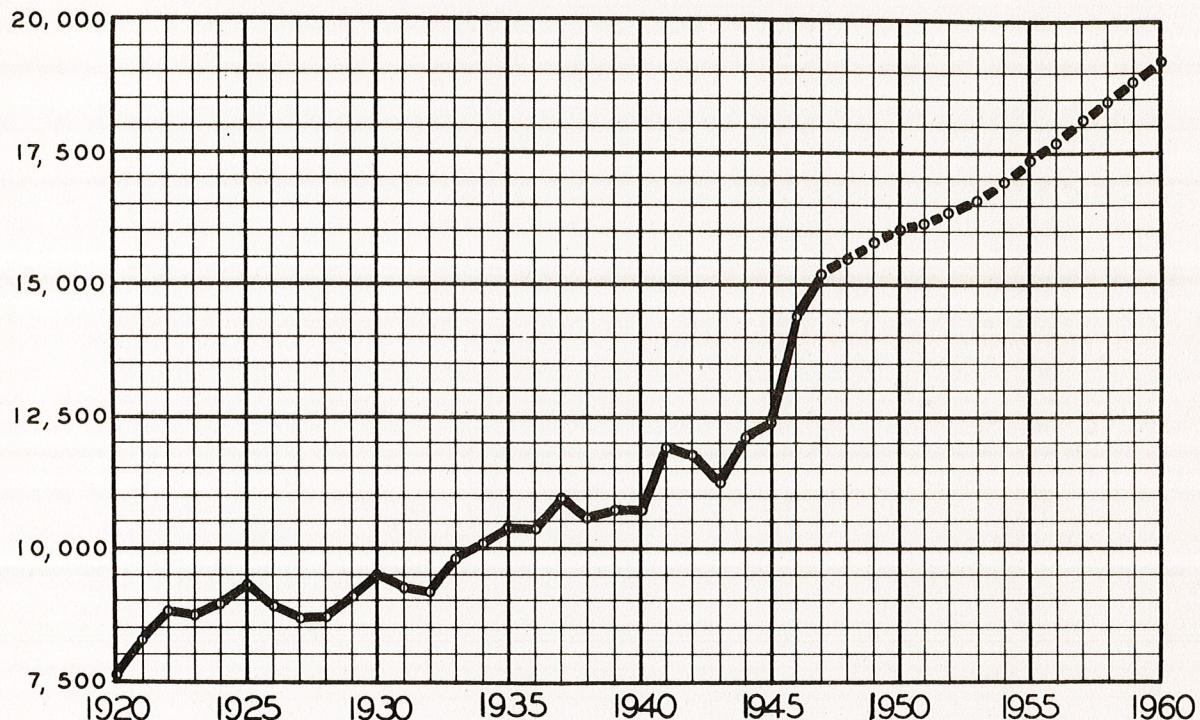
#### COUNTY POPULATION TRENDS

The graph above (Figure II) charts the growth of the population of Sonoma County from 1880 to the present and shows a probable population trend to 1960 based on the studies of the Reconstruction and Reemployment Commission. The current rapid growth in population is by no means uniformly distributed over the state. The Bay Area composed of nine counties of which Sonoma County is a part is one of the two most rapidly growing portions of the state. The expectation for the next decade is continued rapid growth although at a rate somewhat less rapid than that of the present decade.

#### DISTRICT POPULATION TRENDS

Although no actual census of the high school district has ever been made, a very reliable estimate of resident civilian population can be made by taking the ratio of average daily attendance in the elementary schools to that of the county. Since the population of the county is regularly determined by census an estimate of the district population can be made from these ratios. This system of population estimate has been checked in areas where actual census has been made and the results show a high degree of validity. Figure III shows the estimated population growth of the high school district from 1920 to 1947. The "trend" or estimated future

FIG. III ESTIMATED POPULATION, ANALY UNION HIGH SCHOOL DISTRICT



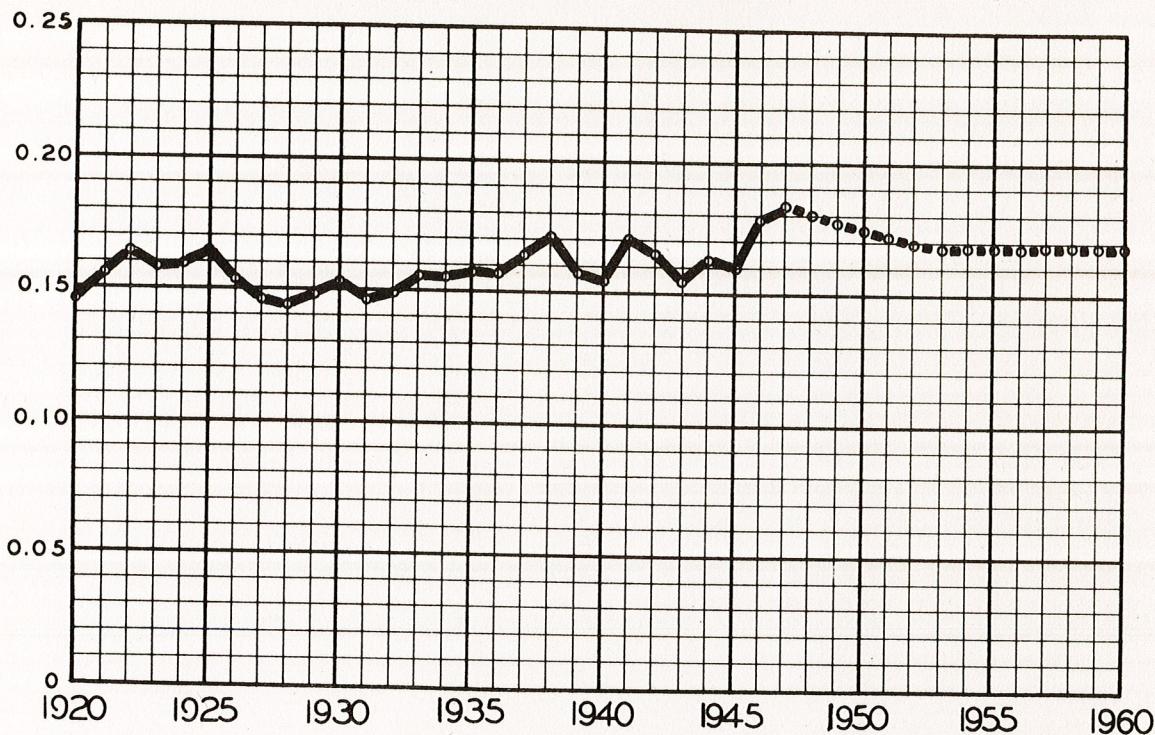
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population is based on the studies of California's Reconstruction and Reemployment Commission. The graph indicates that the population of the district has grown from 10,000 to more than 15000 in the last ten years and can conservatively be expected to grow to about 19,000 by 1960.

#### COMPARATIVE GROWTH

Since our research will frequently involve the use of county wide census bureau and school statistics, an analysis of the rate of growth of the district as compared with the county as a whole will be informative. The graph in Figure IV shows the population of the district relative to the county population. In 1920 the population of the district apparently was about 15 per cent of the total county population. This has increased slightly through the years and currently the population of the district seems to be a little more than 18 per cent of the total county population. The average for the last five years has been just a little less than 17 per cent.

FIG. IV RATIO OF GROWTH OF ANALY UNION HIGH SCHOOL  
DISTRICT TO SONOMA COUNTY

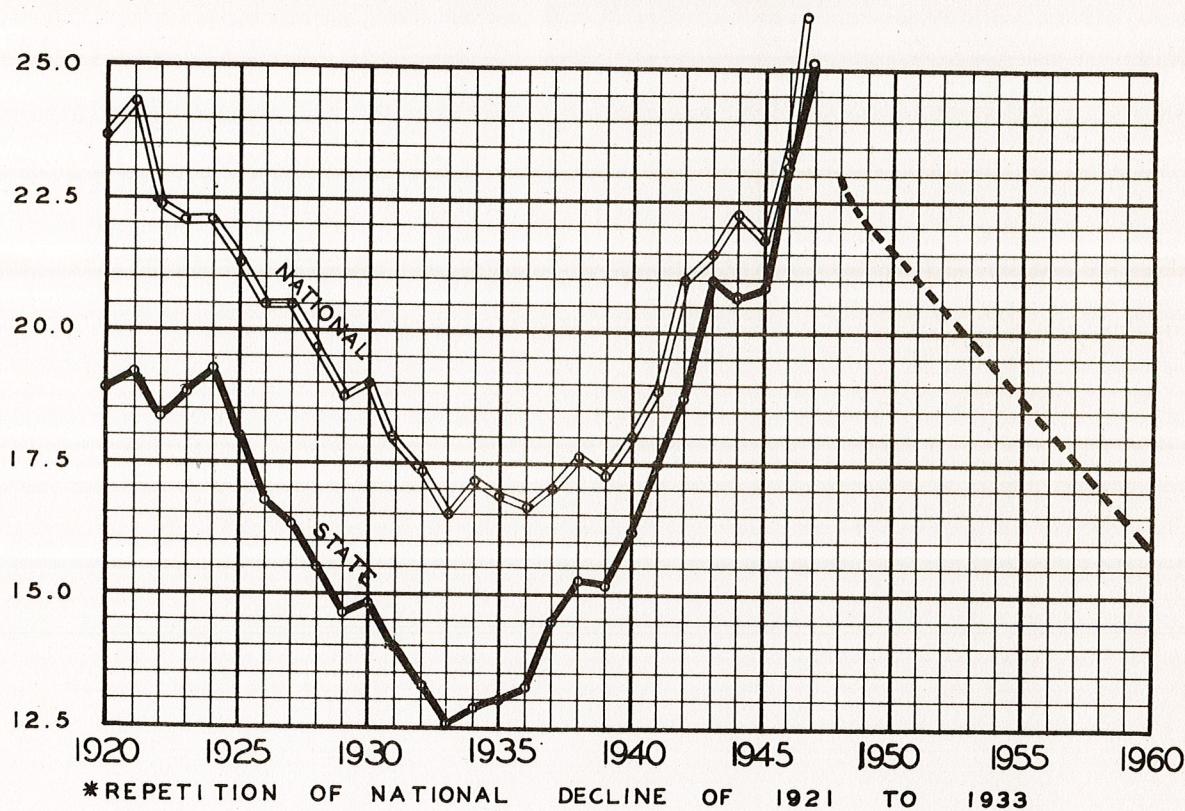


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#### BIRTH RATES

The changing birth rates of recent years is no less significant to the schools than is the growth in general population. The birth rates from 1920 to date for the state and for the nation are graphically represented in Figure V. These birth rates are expressed in number of births per thousand of general population. It will be noted that the birth rates fell steadily from 1920 to 1933. In 1920 the birth rate for the nation was 23 births per 1000 of general population whereas the state birth rate was about 5 births per 1000 less than the nation. California's peoples were in large part older retired people—hence a lower rate. In 1933 when the state rate was 12.5 per 1000 and the national rate 16.5, the birth rate trends reversed themselves and since that time there has been a most phenomenal and significant increase. Of particular significance to Californians is the fact that California's birth rate has climbed more rapidly than the national rate. At present there is no significant difference in the birth rate for California and that of the nation. This represents a rather fundamental change in the character of the population of the state. In the immigration of recent years, young families have predominated and the "old folks home" characteristics of the state have in large part disappeared. The important fact for those concerned with school problems

FIG. V CALIFORNIA AND NATIONAL BIRTH RATES:  
 NUMBER OF ANNUAL BIRTHS PER THOUSAND POPULATION  
 ESTIMATED POST WAR DECLINE\*



is that for each 1000 of our growing population there are more than twice as many children born as were 14 years ago.

#### NUMBER OF BIRTHS

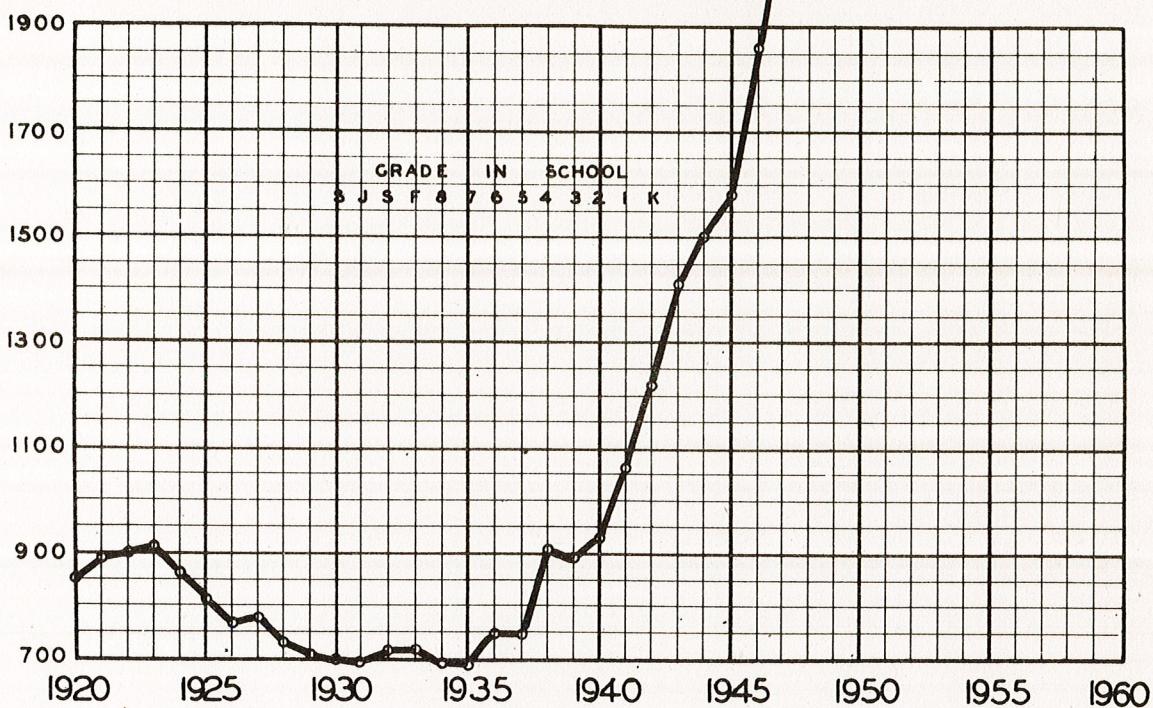
The effects of both this rising birth rate and the steady tide of in-migration is better shown if we consider it in terms of the number of births. Figure VI shows the number of births in Sonoma County each year from 1920 to 1947 and Figure VII shows the number of births in the school district. The figures for the county births are taken from the official county records of births. The figures for the district are derived from Figure III.

The effect of this increased number of births can be seen at a glance. The number of births this year is nearly three times the number born in each of the years in which our present high school students were born.

#### OTHER FACTORS AFFECTING SCHOOL ATTENDANCE

Not only is it true that the number of potential high school students is increasing sharply, but the proportion

FIG. VI NUMBER OF REGISTERED BIRTHS IN SONOMA COUNTY AND THEORETICAL GRADE IN SCHOOL IN 1947 - 48



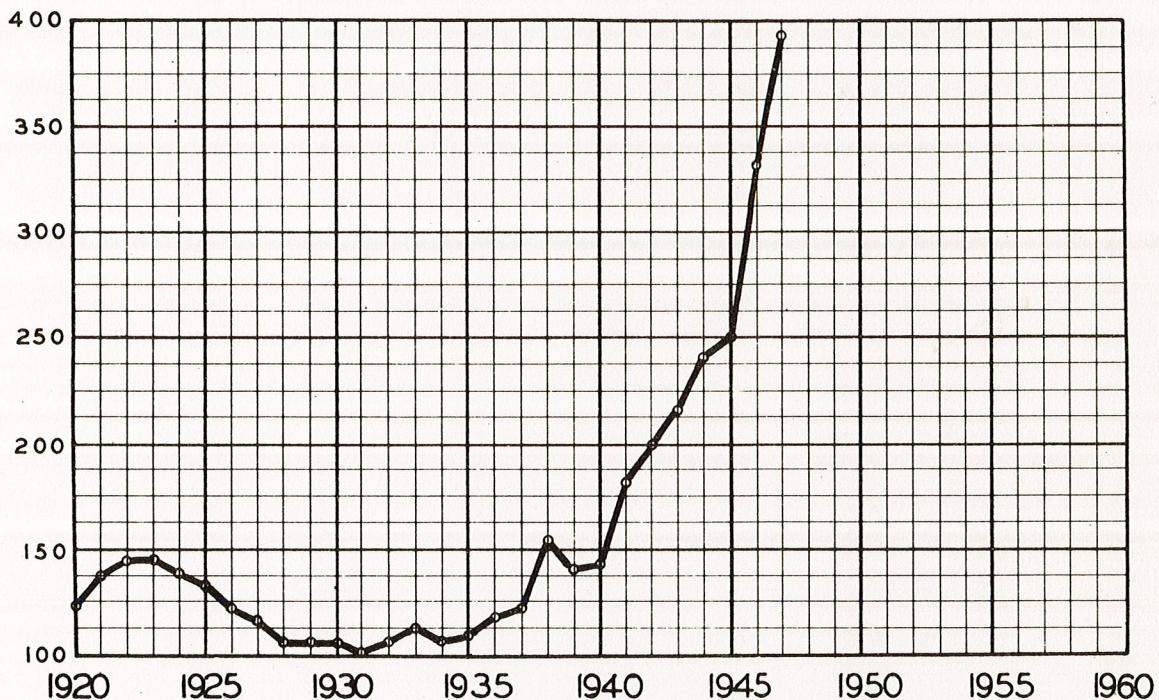
of potential students who enroll and remain in attendance for the entire four years can be expected to increase in the ensuing years. At least five factors are operating now to cause an increase in the drawing and holding power of the high school.

First are economic conditions and job opportunity. With the return to more normal conditions concerning economic attractiveness of wages and concerning the decreasing opportunity for jobs for children of high school age, it is expected that the number of young people dropping out of high school to go to work will decrease markedly.

A second factor that has operated in the past several years has been the competition of war conditions. The growth of high schools was definitely retarded because of the siphoning off of the older boys into war work and into the services.

Analy High School experienced a rather extreme interruption in the growth of the school during the war. The proportion of young people who attended high school nearly doubled between 1920 and 1940. In 1920 for each 1000 of general population in the district there were 27 students in the high school. This proportion increased somewhat irregularly, but by 1940 there were 49 students in the high school for each thousand people in the district. With the advent of the war this proportion fell precipitously and by the end

FIG. VII ESTIMATED NUMBER OF BIRTHS  
ANALY UNION HIGH SCHOOL DISTRICT



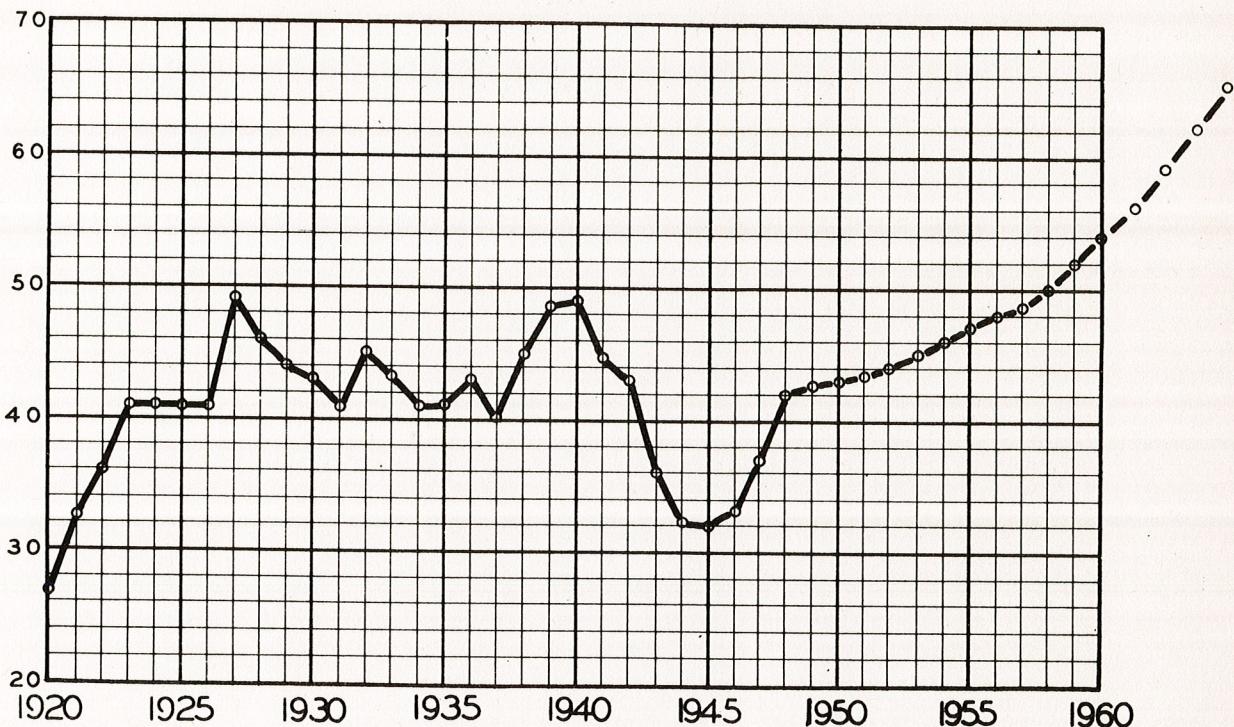
of the war the proportion was 31 students per 1000 of general population. That trend has again reversed itself and has climbed rapidly since the war. Currently there are 44 students in the high school for each 1000 people in the district. This growth and the war time decline of the school's holding power is shown graphically in Figure VIII.

The third factor relates to compulsory education laws and their enforcement. Not only have legal enactments increased the field of compulsory education, but enforcement has been pressed more vigorously and more effectively now that the conflicts of war conditions are relieved.

The fourth factor relates to a changed social attitude toward the value of a high school education. In a comparatively few years a high school education has become the minimum acceptable in the social and commercial world.

A fifth cause of increased drawing and holding power of the high school has been the improvement of the curricular and extracurricular program of the school. Over a period of years the offering has been enriched and expanded so that there is a better chance to meet a variety of student needs. In earlier years the non-academic student simply didn't go to high school or else dropped out quickly.

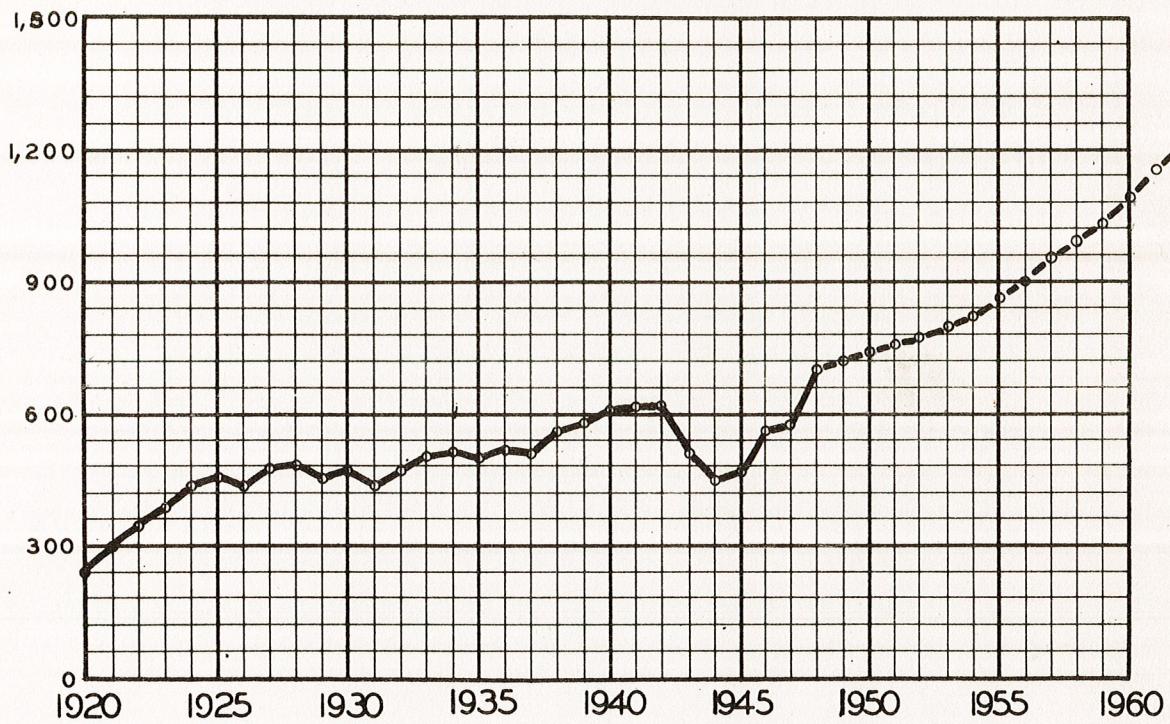
FIG. VIII ATTENDANCE RATIO: NUMBER OF HIGH SCHOOL STUDENTS IN AVERAGE DAILY ATTENDANCE IN ANALY UNION HIGH SCHOOL PER THOUSAND OF GENERAL POPULATION IN THE ANALY UNION HIGH SCHOOL DISTRICT



#### SCHOOL ENROLLMENT TRENDS

Several statistical procedures are in common use for estimating future enrollments. We have elected to limit our estimates of enrollments to the immediate future where the count can be simple and direct. By consulting the official records we can find the number, ages, place of residence and names of all the children born in our district and not yet in school. By reference to elementary school records we can get the same data for children of grade school age. From these we subtract the numbers which normally, for various reasons, do not attend secondary schools and to it we add the number that normally move into the area as the community grows. By this conservative statistical procedure we can estimate enrollments up to the time that the youngsters born this year are in high school or until about 1963 or 1964. By this process which is essentially simply "counting noses" we have determined the probable future enrollment and portrayed this by the graph in Figure IX.

FIG. IX ANALY UNION HIGH SCHOOL ENROLLMENT  
RECORDS AND PROBABLE FUTURE GROWTH



#### SUMMARY

The graph shows that the high school has had a continuous, steady and healthy growth with the exception of the war years. The calculations for the future indicates that continued growth is to be expected with the rate accelerating as the effect of the high birth rates of recent years begins to affect the high school. It is for the purpose of developing carefully prepared plans to meet this growth that the Board has undertaken this study. It is the paramount purpose of the Board to develop a plan which will assure us that every dollar expended and every building built shall contribute not merely to the housing of the added enrollment but to a pattern of schools that will give the best educational results.

## CHAPTER III POLICIES OF THE BOARD OF TRUSTEES

### INTRODUCTION

The primary purpose of this Long Range Building Program is to outline plant development and site acquisition for a long period in the future. The development of such a well thought out plan requires the establishment of certain basic fundamental premises and policies. This does not mean that changes cannot be made. Flexibility is in itself a basic principle of good school administration, but school buildings are highly specialized plants, built to meet certain needs, to accomplish definite purposes, and must therefore be the result of considered basic policies. The Board, therefore, wishes to set forth here in concrete terms the basic policies and premises which are to be the frame work of our Long Range Building Program.

### ENROLLMENT LIMITATIONS

The adoption of standards of maximum school enrollment is one of the primary steps in our planning procedure. Many times the size to which a given school grows is left entirely to chance. Unplanned growth with no controlled limits cannot be expected to result in a good educational pattern. In California today a number of schools have been allowed to become too large for either economical financial operation or the most effective educational patterns. Some California school systems are currently engaged in the expensive and difficult process of reducing enrollments at schools that have been allowed to become too large.

High school students because of the greater degree of maturity are socially adjustable to larger student bodies than are elementary students. Nevertheless the social adjustment of these students places sharp limitations on the size of the schools. To maintain the desired personal relationship between student and teacher and to foster the spirit of comradeship so essential to the proper development of the high school youth the large enrollment must be avoided.

Furthermore, studies of school operating costs show a tendency for costs to disproportionately increase as enrollments get above twelve or fourteen hundred. Where savings have been effected by the operation of large plants it has usually been achieved by curtailments in the educational offerings.

While educators are seemingly quite unanimous in their condemnation of oversized schools there is no agreement as to the definite point at which either educational or financial

efficiency begins to deteriorate. Perhaps the most commonly accepted ideal is 1000 to 1200 students. Usually local factors will color or influence the decision. The important point is that a decision be made. Without a known goal or an established maximum intelligent planning is impossible. Proper interrelationship of the various units and correct capacities of special facilities can only be accomplished if the maximum enrollment is known when the planning is being done. Whatever expansion of our school plant is required it must be accomplished in accordance with a well ordered plan with the ultimate objectives completely formulated before any construction is begun.

The Board after prolonged study has adopted as its policy the planning of our school for an enrollment of 1000 students. Several factors have entered into this decision. First an enrollment of 1000 is sufficient in size to make economically practical the offering of a well rounded secondary program. It is large enough to make a school whose activities, both local and interscholastic, are such that its students may feel the pride and loyalty that puts life and meaning into their educational experience. It is small enough so that the student's contact with his teachers will have a depth of meaning and the lives and character of the men and women of the faculty will have a deep personal significance in the development of the life and character of the student. It is small enough so that the individual student will feel that it is his school, that he has a part in it and that he is a part of it.

There are some impelling practical local reasons for the exact figure of 1000. First our auditorium is limited to that capacity. Engineers' and architects' examination of the auditorium indicate that its expansion is impractical. To plan a school without sufficient auditorium capacity to seat its student body is to accept a permanent limitation on the effectiveness of our school program. Second, the site area with the planned expansion is insufficient for the buildings, shop areas, and the playing fields necessary for the conduct of a well rounded play and physical education program for more than 1000.

There is one other significant factor of which the Board is well aware and of which the public should be apprised. At various times in this and other communities school plants have been constructed with the feeling that the problem was permanently settled. The Board recognizes that a high school with a normal capacity for 1000 students cannot be expected to meet the needs of this district for more than a few years. What is then to be done? The stubborn fact that the planned plant expansion is not sufficient to care for the potential student body which current records indicate

is now in our pre-school age group has been most disturbing and no little thought and study has been devoted to its solution.

One solution that the Board has weighed is the establishment of a second high school at some other point in the district. Studies of population and comparative rates of growth in various parts of the district do not indicate that sufficient concentration of students may be anticipated at any point in the northern part of the district to justify laying the plans for an eventual second high school there. That this might change in the future is entirely conceivable.

The possibility of redistricting must also be given consideration. The future possibility of extensive reorganization of school districts cannot be disregarded particularly in view of current statewide efforts for redistricting. The Board therefore establishes as a basic planning policy that our plans shall be adaptable to either a continuation of present district organization or to future reorganization.

A possible solution for our future needs may be found in the organization of one or more junior high schools in the district. This might serve a triple purpose. First, it would reduce by nearly one third the number of students to be accommodated at the high school; second, it would in some measure alleviate the overcrowded conditions in some of the elementary schools of the district; and, third, it would bring to the upper elementary grades the advantages of some departmentalization and specialization. Legal provisions make it possible either under present district organization or under proposed plans for redistricting.

What solution will best meet our future needs cannot be foretold at this juncture. It should be pointed out, however, that it cannot be solved merely by increasing the enrollment capacity of our present high school. If we were willing to accept the handicaps to our educational program that an enrollment in excess of 1000 would entail and set our maximum at say 1200 or 1400, we would not have solved the problem. We would merely have set back the time at which we will be forced to meet it.

The conclusion of the Board is, therefore, that the interests of the district will be best served by planning the high school facilities for our present site for an enrollment of 1000 students. When the enrollment grows beyond that point, further consideration must be given to the best way by which the needs can then be met. At present it appears that when that comes a second high school at some other point in the district or the establishment of one or more junior high schools will best serve the district's needs.

## SITE EXPANSION

To properly conduct a well rounded high school program requires an adequate site. The buildings of our plant with the immediately surrounding areas, shop yards, parking spaces, walks and drives will require nearly ten acres. The physical education and sports program for a school of a thousand students requires playground facilities for eight groups operating simultaneously. A school of 1000 students will normally have four groups of girls and four groups of boys engaged in physical training activities in the typical class period. This means that space and facilities for eight activity groups must be available. In addition to the regular and required physical education program the interscholastic sports activities require highly developed fields. While much of the area used by the sports program is also used by the physical education program, not all of it can be put to such duplicate use.

Our present site contains somewhat less than 18 acres. The area has been examined to see how it might be reasonably expanded. It can be increased to approximately 25 acres and while 30 acres is felt to be the desirable goal for a school of 1000 careful site utilization will insure an adequate program on the 25 acres. The Board has adopted as its policy with respect to site expansion the immediate acquisition of adjacent usable property that will increase the site to approximately 25 acres as shown on the Master Plan.

## PLANNED PLANT FACILITIES

To properly conduct the varied activities of a modern high school a multiplicity of facilities is required. The Board recognizes as its responsibility the provision of these facilities within the limits of the district's financial ability. Our objective is to ultimately provide the following facilities in a proper balance for an enrollment of 1000 students.

It should be recognized that a plant with a normal capacity of 1000 students is capable of carrying some overloads. Our present school with a normal capacity of 575 now serves an enrollment of over 700 and our plant, designed for 1000, may be called upon to house 1200 or 1250 for a temporary period. Such overloading is highly undesirable but in periods of expanding enrollment often cannot be avoided while additional facilities are being financed and constructed.

## PLANT FACILITIES

### ADMINISTRATION AND SERVICES

Administrative Offices  
Auditorium  
Cafeteria  
Health Center  
Library

### ACADEMIC

Academic Classrooms  
Science Department  
Commerce Department  
Music Department  
Art Department

### VOCATIONAL AND PRE-VOCATIONAL

#### Shops

Agriculture  
Woodwork  
Machine  
Auto Mechanics

#### Homemaking

Cooking  
Sewing

#### Physical Education

Boys' Gymnasium (with adequate spectator accommodations)  
Girls' Gymnasium  
Boys' Locker-Shower-Dressing Facilities  
Girls' Locker-Shower-Dressing Facilities  
Bleachers or Stadium  
Tennis Courts  
Boys' Playing Fields

Football Field  
Track  
Practice Field  
Baseball Field  
Paved Small Games Courts

#### Girls' Playing Fields

Soccer and Hockey Field  
Softball Field  
Paved Small Games Courts

The swimming program is expected to be continued at the Municipal Plunge.

#### HEALTH SERVICES

It is to be expected that the school will continue to increase its importance in the field of health and physical fitness.

#### AUDIO-VISUAL AIDS

While audio-visual aids have been used to supplement older teaching methods for many years, extensive use of this valuable tool has been limited by two factors; an inadequate supply of quality visual aids and a lack of proper school room facilities. The effective use of this teaching technique by the armed forces during the war has stimulated the production of good audio-visual equipment and materials and in the design of additional plant facilities. The employment of this teaching technique must be given full consideration.

#### ADULT EDUCATION

The present offering in the adult education department covers a rather wide field of interest. In the field of physical fitness there are various gymnasium and sports activities. Widely diversified interest in the various other phases of school activity are accommodated. The basic policy upon which the adult school operates is that its function is service for the adults of the community. Under this guiding principle it is prepared to offer any subject for which there is adequate community demand and for which facilities and instructional staff are available.

#### COMMUNITY CENTER

The high school in California by law and by custom is a community center offering manifold services to the people of the community. To best meet these needs there should be a functional working relationship between those facilities in most frequent community use, i.e. the cafeteria, auditorium, gymnasium and athletic fields.

At present the high school facilities are in constant demand for a multiplicity of community activities. It is the policy of the Board to make available to groups and organizations devoted to the social and cultural betterment of the community the facilities of the school wherever and whenever this can be done without interference with the school's primary function.

## CHAPTER IV THE WELL PLANNED SCHOOL

### THE SIGNIFICANCE OF THE LONG RANGE PROGRAM

This Long Range Building Program, issued by the Board of Trustees, is an outline intended to serve as a guide to this Board and to future boards and their executive officers in the location, planning and development of sites and buildings. It is a carefully formulated long range, official statement of policy which seeks to avoid the difficulties, mistakes and wastefulness of haphazard plant developments made with only the immediate needs in mind.

### THE WELL PLANNED SCHOOL PLANT

The school plant is more than a school building. Site, orientation, ground utilization, health center, school playgrounds, provisions for access, each is a definite part of the school plant. All parts must be in proper and effective relationship to each other. Poor planning or no planning at all has frequently resulted in school plants with poor interrelationship of buildings, improperly designed rooms, structural inflexibility, no provision for expansion, waste space, improper exposure of classrooms, lack of standardization, and duplication of utilities.

The school plant is comprised of various areas of activity; administration, academic, vocational, athletic and community use areas. Each area of activity must be an integral unit in itself and yet be intimately related to all other activity areas. There is no set relationship, no patent formula for achieving this area interrelationship. Each problem must be carefully analyzed and each solution worked out individually. Each solution must provide for smooth student circulation, economical supervision, efficient administration, provision for expansion, elimination of interfering noises and accommodation of traffic.

The complete plant must do more than passively house the activities of the school program. It must stimulate the teaching and learning processes by being easily usable and by creating a bright, open, inviting and healthful atmosphere geared to the needs of the students. It must avoid the dark, the heavy, the monumental and the inflexible -- those qualities which tend to thwart the learning process.

The school plant belongs to the community. It is the answer to the community's needs, an expression in three dimensional form of an aspect of the community itself. The plant should derive its character from the nature of the community, its

form and arrangement taking advantage of the climatic and other characteristics of the region and of the peculiarities of the site. With the architect rests the major responsibility of the design after the statement of need, of policy, and of planning characteristics have been set forth by the Board of Trustees.

The general characteristics which the Board of Trustees conceives to be fundamental guides to the architects who may be employed in the future to prepare plans for the specific buildings are set forth as follows:

### Flexibility

The educational program of today is different from that of yesterday, and most certainly the program of tomorrow will differ from that of today. Nothing in the character of the educational program, educational policies, or educational standards is static. Even though every solution of the building program is eminently adapted to the full and efficient functioning of the program at the time of construction, this happy relationship cannot be expected to continue indefinitely. Progress, unforeseen developments, new conditions, all effect change. A different teacher, a different subject, a different time, will require changes. The only master plan, then, that can be safely evolved is one which is based on a philosophy of complete flexibility of buildings.

To assure this flexibility, as many of the following general procedures and features should be incorporated in the structure as local conditions will permit. Wherever possible, partitions should be non-loadbearing and have the function of space division only. Thus, without the necessity of structural alterations, we will be able to adapt the room space to the future needs of the school. Doors and windows should be interchangeable so that they may be relocated. Thus additional doors may be located in the classroom to open out on either side, facilitating changes in utilization and size. Doors and windows should be standardized in design and size for interchangeability and for ease of replacement and maintenance. Furniture, storage cabinets, and chalk boards should not be built in, but provided in the form of standardized, movable units so that changes in the educational program, room utilization or other unpredictable factors, can be taken care of by inexpensive shifts. Mechanical and electrical services such as heating, ventilation, plumbing and lighting, should be kept out of non-structural partitions whenever feasible. Lighting, ventilation and heating should be so arranged that moving of partitions does not unbalance the system nor require expensive alterations. Complete accessibility for

water, gas, steam, air and plumbing to all parts of the structure must be provided for in the design. The achievement of truly functional design incorporating complete flexibility will assure the taxpayer of the District that all buildings constructed under this Long Range Building Program will be permanent long-time educational investments, readily adjustable to the needs of the community whatever they may grow to be.

### Visual Standards

Standards endorsed by the State Division of School Planning recommend a minimum of 30 to 50 foot-candles on every desk in the classroom, with the least possible variation in intensity from the brightest to the darkest area. Brightness or glare in the field of vision must be held to an absolute minimum. Experience has conclusively demonstrated that these standards may best be met by use of skylighting, bilateral, or trilateral lighting, with the principal window area on a north exposure. Compromise with the ideal conditions may in some cases be dictated by circumstances. Color is also a vital factor in visual environment and must be given careful consideration.

### Ventilation

Adequate ventilation is a necessary condition to effective learning. California climate is such that natural ventilation will give good results if those features of the building which relate themselves to ventilation are properly designed. The windows and the method of opening them must be adequate. When possible to do so, cross ventilation must be provided.

### Heating

One of the most successful and modern methods of schoolroom heating is by radiant heat obtained by floor heating from hot water circulation through coils embedded in the floor. Costs of installation are about the same as for other first-class heating installations. Costs of operating two similar buildings, one heated radiantly and one by a conventional heating plant, reports the fuel cost of operating the radiant heat to be less than half that of the conventionally heated building. Maintenance costs are likewise low. Experience has shown that much lower room temperatures are comfortable with heated floors, resulting in more healthful conditions through reduction in temperature differentials between outdoor areas and the classroom.

## CHAPTER V FINANCING OUR LONG RANGE BUILDING PROGRAM

### GENERAL INFORMATION ON BUILDING COSTS

Prevailing conditions in the building industry causes the present to be a most difficult time in which to make reliable predictions concerning costs. It is presently impossible to predict how long it will be before full production and adequate distribution will be resumed.

During the war and for several years prior thereto cost trends of public construction have been consistently upward. Since the war rising wages, the rising price of materials, greater risks involved and inability to get firm bids from subcontractors have combined to more than double pre-war costs. While costs may possibly decline somewhat as materials become more readily available it is doubtful if any large reduction can be expected, since labor may be expected to continue to demand high wages and materials to bring high prices. As conditions become stabilized, the inflation in costs caused by the risk factor may tend to be reduced. The prospects for reduced costs are not sufficient to warrant delaying badly needed construction. In any event the probability of a decrease in costs seems to be no greater than the possibility of an added rise.

In order to arrive at some degree of standardization in applications for State Aid, a committee of the California Council of Architects meeting with a representative of the State Division of School Planning in November, 1947, discussed unit costs. Taking the most rigidly economical construction as a basis, the following square foot costs were arrived at. They do not include equipment such as lockers, kitchen equipment, gymnasium apparatus, classroom furniture, refrigerators, pianos and other items not customarily furnished as part of the general construction contract.

Typical elementary classrooms . . . . .	12.00
Administrative units, multi-use rooms, crafts shops, art rooms, cafeteria . . .	13.00
Laboratories, science rooms, homemaking rooms, toilets, showers, locker rooms . . . . .	15.00
Kindergarten rooms with toilets . . . . .	14.00
Gymnasium play floor areas. . . . .	10.00
Open shop space, unfinished . . . . .	9.00
Unfinished storage rooms. . . . .	8.00
Open corridor and covered walks . . . . .	6.00

Using these figures as a basis and taking an average elementary school plant with its administrative unit, classrooms, toilets, storage rooms, open corridors and covered walks this basic cost approximates \$15,000 per classroom unit.

Added to this must be the costs of equipment, site development, landscaping, architect's fees, State checking fees, and contingencies. For budgetary purposes it would be safer to figure on about \$20,000 per classroom unit at July, 1948, cost levels. This figure will have to be adjusted in terms of the trend of building costs from month to month.

### THE CONTROL OF COSTS

Permanent and adequate classrooms may be built in a rather wide range of costs, ranging from the economy type to the ideal or luxury type. For this reason it is important that due consideration be given to the financial situation of the District in relation to the probable future building needs, and a scale and quality of construction adopted that can be carried through indefinitely. To begin a building program under conditions of finish, equipment and features that cannot be sustained leads to serious difficulties in the future.

One important factor in cost control is the choice of an architect. An architect who specializes in school design has a wider background of school experience than one who does school work only occasionally, and can therefore deliver more value per dollar. A simple and economical structural system, for example, is the key to keeping down the cost of the basic structure. Lumber, concrete and steel cost the same, no matter by what architect they are incorporated into a design. It is the architect-engineers' skill in the use of materials and in engineering design that brings basic economy.

### POLICIES WITH RESPECT TO COST

Since unprecedeted enrollment growth and the necessity for maintaining the existing plants will impose on the district an increasing capital outlay, the Board of Trustees wishes to adopt definite policies relative to the costs of new construction. In the establishment of these policies it is recognized that beauty of architectural design has definite educational values to the school and to the community, and too great a sacrifice of appearance in the interest of costs cannot be justified. It is, therefore, the policy of the Board to employ rigid economies in the design and construction of all school buildings insofar as those economies do not limit the present or future educational efficiency of the school plant.

One of the important factors in the control of costs is under the direct control of the Board of Trustees. By their action in setting up standards of appearance, finish, features, equipment and materials, costs can be varied as much as twenty-five per cent. This point is of sufficient importance to justify rather complete illustration.

In the previous chapter of this report, certain desirable characteristics of a well-planned school building were set forth. By sacrificing some of these characteristics, reductions in costs can be effected. There is a marked difference in cost between a building with glassed-in, heated corridors and one with open corridors. Power ventilation or air conditioning is more costly than natural ventilation. If a tile roof is insisted upon for various reasons, structural and construction costs are markedly increased, whereas the acceptance of lightweight metal or composition roofing would materially reduce costs. Standards of interior finish materials, painting, insulating, roofing, glass, sash, doors, hardware, electric fixtures, heating equipment and other non-structural items of the building are set by the Board with the advice of the architect and are basic to the control of costs. It will be the Board's policy to obtain the greatest usable classroom space per dollar expended through rigid scrutiny of controllable items.

#### FINANCING NEW CONSTRUCTION

The law provides two general methods for financing school plant construction—the "pay-as-you-go" plan and the use of bond issues. Under the provisions of the Education Code, Sections 5961 to 5968 the school board may with the approval of the Chief of the Division of School Planning set up a special building fund for the purpose of accumulating money for capital outlay. It may be continued for as long as five years before expenditure or may be drawn upon for specified purposes as it is built up.

The second method of financing additional building construction is by sale of bonds. The sale of bonds must be authorized by a 2/3 majority vote of the electors of the district. Bonds may be so authorized in amounts equal to not more than 5% of the district's total assessed valuation.

The "pay-as-you-go" method of financing has a very strong appeal. There are no continuing interest charges and a simple majority vote is sufficient to authorize them. It holds some disadvantages however that may make the sale of bonds necessary. The rate of enrollment growth has been so rapid that the relatively slow accumulation of funds by the "pay-as-you-go" method may not meet the district needs. Since the accumulation of money is a rather prolonged process it becomes necessary to build in rather small units. Often this has proved to be a far more costly means of plant expansion than has been the case where one or two good sized contracts can be let. Also interest rates have been extremely low in the post-war period and although there is some trend toward higher rates they remain relatively low. If a

"pay-as-you-go" plan were effected and the voters of the district were to authorize a special building tax of say 30 cents per \$100 assessed valuation and allowing for 10% tax delinquency the full five years would be required to accumulate \$230,000. Since this would probably not be more than enough to build one of the proposed classroom wings it becomes apparent that the "pay-as-you-go" plan will not meet the needs of the district.

The current bonding capacity is indicated in the following tabulation:

Assessed Valuation of the District	\$17,121,000
Bonding limit	.05
Total Bonding Capacity	<u>\$856,050.00</u>
Outstanding Bonds	<u>120,000.00</u>
Net Bonding Capacity	\$736,050.00

If bonds were voted in the amount of \$736,050.00 they can be expected to cost the taxpayer an annual tax of \$.36 per \$100 of assessed valuation. This is based on the assumption that the bonds would be sold at an interest rate of 2-3/4% with a 20-year maturity and an allowance for 10% tax delinquency. Bonds have been sold in the post-war period at rates varying from less than 1% to as much as 2-1/4%. The following table gives the cost to the taxpayer at various interest rates and for 20 and 25 year bonds:

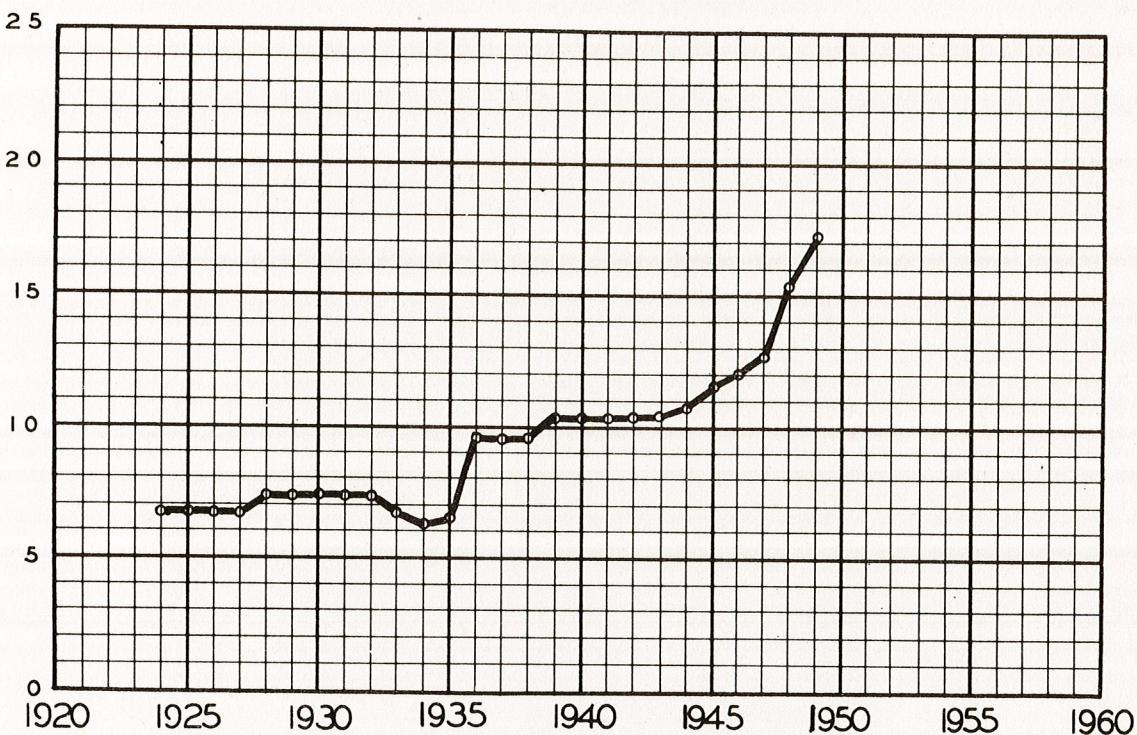
<u>Interest Rate</u>	<u>Maturity</u>	<u>ANNUAL Cost per \$100 of Assessed Valuation</u>
2%	20 yrs.	\$.33
2 1/2%	20 yrs.	.35
3%	20 yrs.	.37
2%	25 yrs.	.28
2 1/2%	25 yrs.	.30
3%	25 yrs.	.33

Some California school districts are finding it necessary to employ both methods of financing, supplementing bond issues with a "pay-as-you-go" program.

#### TRENDS IN ASSESSED VALUATION

The history of the assessed valuation of the district is shown in the graph in Figure X.

FIG. X ASSESSED VALUATIONS OF THE ANALY  
UNION HIGH SCHOOL DISTRICT



In 1935 the graph indicates a sudden sharp increase. This increase was caused by a change in assessment practices compelled by the Riley-Stewart Bill which became effective that year. Previous to that time the several counties used various assessment ratios, some as low as 25%. The Riley-Stewart Act standardized the ratio of assessed valuation to real value at 50 per cent and sought to introduce uniform assessment practices in the various counties. This sharp rise was in greater part only a "paper increase" insofar as real property values in the county were concerned, but since the assessed value of operative properties of corporations were at this time returned to local tax rolls it represented a considerable broadening of the tax base of schools and other local political subdivisions.

The district exhibits a strong and continued growth in assessed valuation. Nevertheless, the financial problems which confront us are acute and are almost certain to continue so. The average assessed valuation per student in average daily attendance in 306 high school districts of the state is \$33,873.00. (Based on ADA and assessed valuations for 1945-1946) The assessed valuation per student in our district is \$25,209.00. It is this relatively low valuation that must form the basis upon which all locally collected funds for both operation and capital outlay are levied. The recent increases

in assessed valuation broadens the tax base, but it is not to be expected that growth in valuation will keep pace with growth in enrollment.

#### FINANCIAL AID FROM OTHER SOURCES

There seems to be no likelihood of any immediate financial assistance from federal sources. Some proposals for school aid have been made in the Congress, but current attitudes seem to be strongly opposed, and no bill for this purpose has yet received serious consideration. If and when a depression forces the national government into an extensive program of public works, aid from that source may become available.

Aid from State sources is much more probable. The State legislature of two years ago enacted into law a bill which allocated \$20,000,000 of state money for capital outlay in school districts. The last legislature enacted a similar bill allocating \$35,000,000 for the same purpose.

Essentially, this bill makes a school district eligible to apply for funds if after expending within 5% of their total bonding capacity and levying the maximum tax rate they are unable to provide the necessary school facilities. While the amount of the funds provided is probably very limited in relation to the need, it nevertheless represents a significant departure from California's historic position with reference to school financing. Heretofore, State participation in school financing has been for operating costs only. Now for the first time the principle of State participation in capital outlay is established.

However, the provisions of the law as well as the uncertainties that naturally surround the allocation of such money and the limited amount of the appropriations makes reliance on this source untenable. We must face the realities of our problems and find our own solution. Then if and when outside funds become available the local load will be correspondingly lightened.

## CHAPTER VI      SCHOOL PLANT DEVELOPMENT

### THE DEVELOPMENT OF THE MASTER PLAN

Having determined the approximate enrollment for which we must plan and having established those basic policies which are to form the framework of our future building program, we are ready to develop our site Master Plan.

The development of a site utilization plan is a highly technical procedure. The plan contained in this chapter, although a seemingly simple development, represents a collaboration of effort by a staff composed of architects, engineers and school planning consultants, and by the local Board and Administration, and was subsequently reviewed, modified and approved by the Division of School Planning of the State Department of Education. Its development involved an extended series of school board meetings in which each step of the development by the technicians was reviewed, criticised and modified.

Out of this study has finally come a complete state-approved site utilization plan which can be developed on an economical scale and an efficient educational pattern.

### THE DUAL NATURE OF THE PLAN

The plan envisages what might be termed two major phases -- first, the long range or total required plant expansion, and second, the immediately needed facilities or initial construction program. It does not purport to be an architectural plan. It is space and area designation which is to serve as a guide to the architects that we employ to plan each building. It will eliminate the mistakes and waste which is virtually certain to accompany haphazard plant development. It will insure the proper inter-relationship between the buildings of the ultimate plant. Only by now planning all the units of our school plant can we assure ourselves that the completed school will lend itself to the kind of an educational program which our district should have.

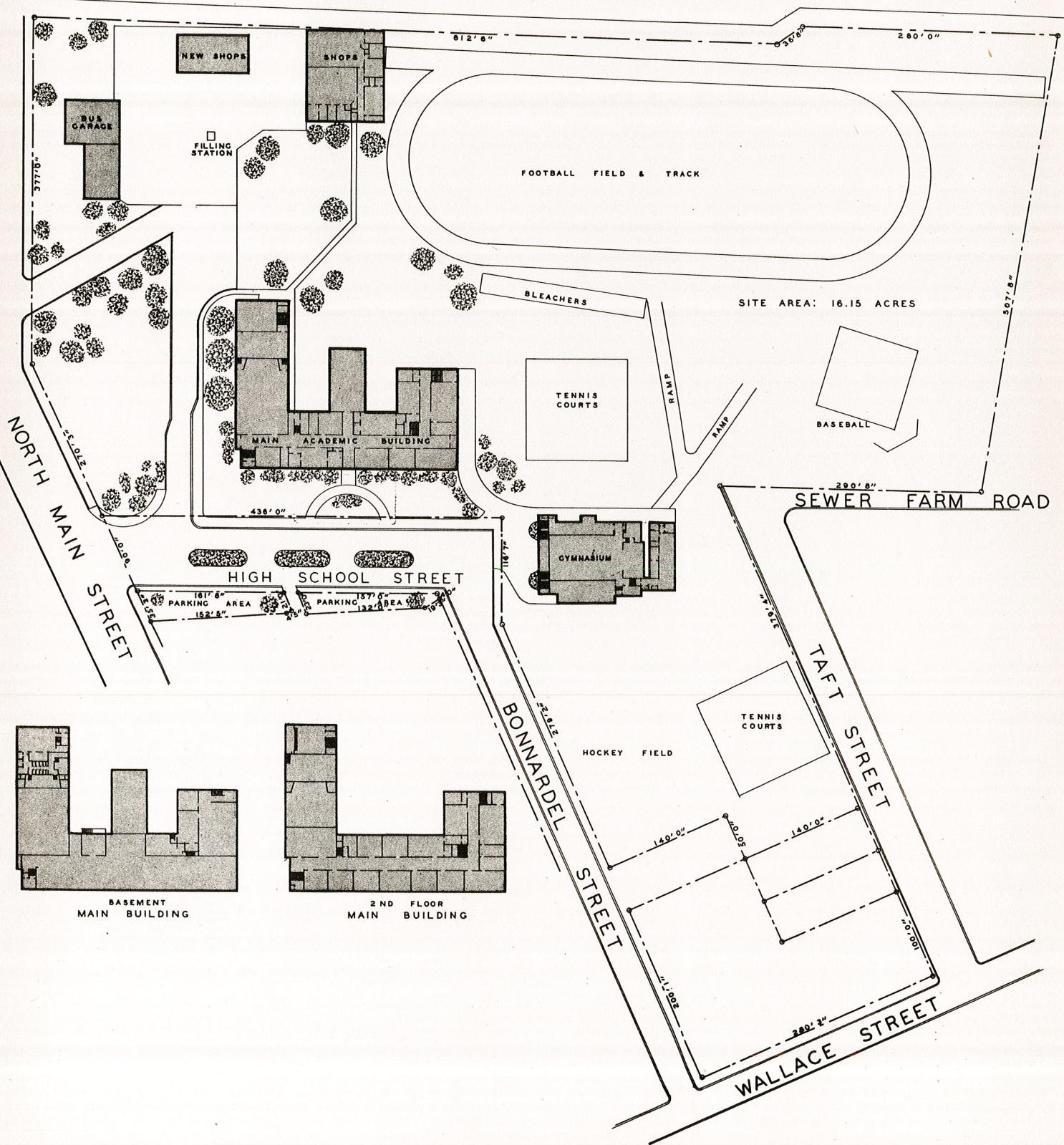
### THE EXISTING PLANT

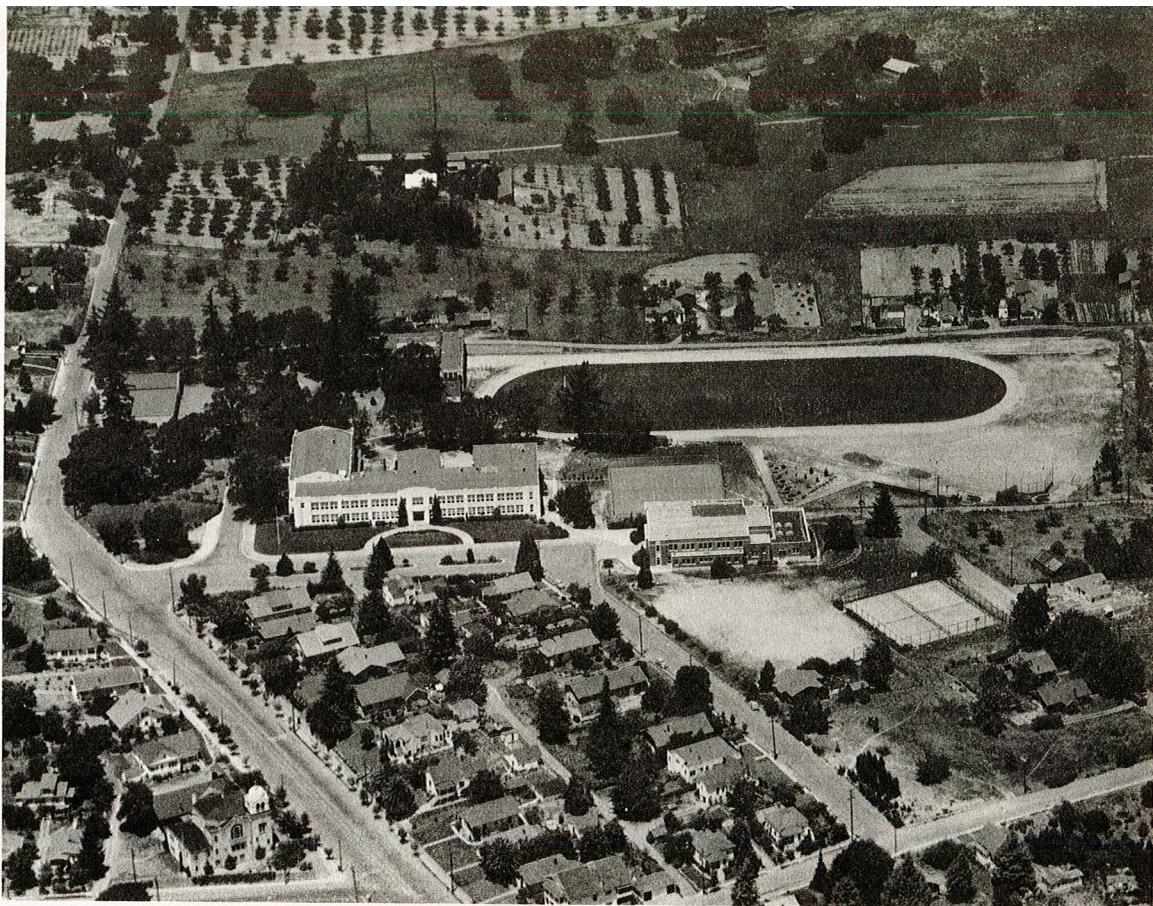
Our present plant consists of four buildings on a site of approximately 18 acres. The accompanying diagram shows the site and the buildings located on it.

The Academic Building is a fine structure conforming to the Field Act. In it are the classrooms, auditorium, cafeteria,

ANALY UNION HIGH SCHOOL  
EXISTING SCHOOL PLANT

0' 10' 25' 50' 75' 100' 150' 200'





### ANALY UNION HIGH SCHOOL

This photo shows the academic building and the gymnasium. The old shops and the bus garage may be seen through the trees. This picture was taken prior to the construction of the new agriculture building. A careful study of this photograph in conjunction with the site utilization plan which appears on the adjacent pages will help to visualize the planned development.

little theater, music department and administrative offices. It is a splendid building both serviceable and beautiful. At the time of its construction, it was planned as the principal building for a school of 575. Our enrollment last year was over 700 and of course badly overloaded the building. Our gymnasium, although somewhat older than the academic building, is a very good structure, but totally inadequate for the enrollment which it is now required to accommodate.

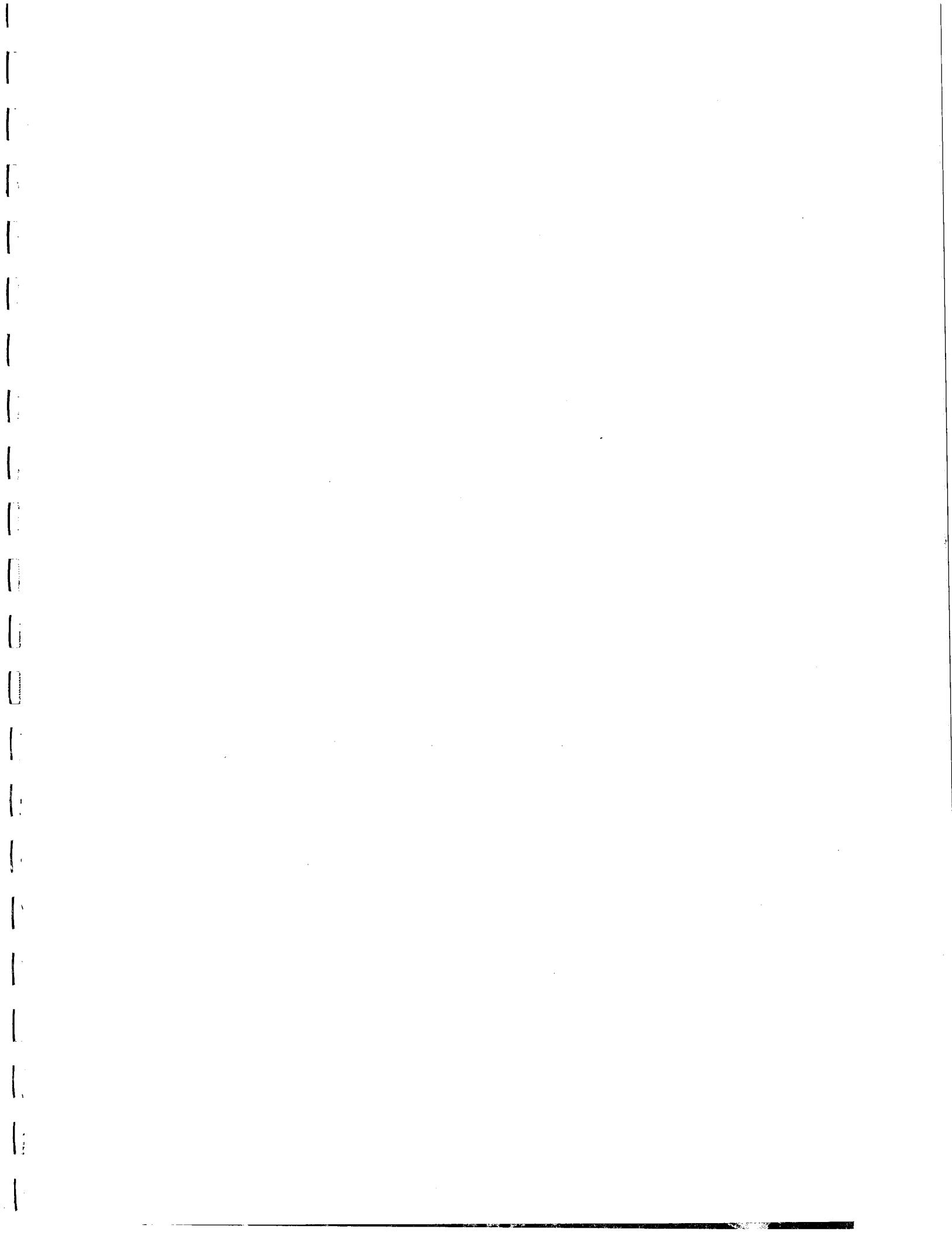
Our shop building is very old and while we may find it necessary to continue its use for a long period, it cannot be properly considered as a part of our permanent plant.

The bus garage is in much the same status as the shops. While it is inadequate as a bus garage, it is now doing good service as auxiliary shop space. Like the shop building it cannot properly be considered a part of the permanent plant. The accompanying aerial photographs give an excellent picture of the buildings and the play grounds and athletic facilities.

#### THE LONG RANGE BUILDING PROGRAM

Our Master Plan, which appears in the accompanying drawing, is based on the policies of the Board as they appear in Chapter III. The plan provides for an orderly inter-relation of the various areas of activity. The administration and Services Area, the Academic Area, the Physical Education Area, and the Vocational Area are so planned that there is a sufficient degree of separation and at the same time a systematic and harmonious integration is achieved.

In addition to the principal functions of the plant, such related problems as student traffic flow, noise control, accessibility to the public, community use and automobile parking have been studied. Not every phase of these problems has been solved to a point of absolute satisfaction. Some compromises with the ideal are necessary. But each has been met and weighed and a workable solution provided. The result is a well-rounded, efficient and economical high school plant. Patrons of the district should be warned, however, that the complete plant cannot become a reality for a long time. Additional building will only be done as additional enrollment growth forces it and can only be done as the necessary financing becomes available. Our problem and our objective here is to develop a plan that will make each addition that enrollment growth requires contribute to the ultimately desired pattern.



# CONCLUSION

In the preceding chapters there has been presented a careful analysis of the plant development problems facing the Board of Trustees of the Analy Union High School District. Growth trends have been analyzed, major premises have been formulated and basic principles agreed upon. If the problems of the present and the future are to be met in an intelligent manner, it is important that the people of the district whole-heartedly support both the long range and the immediate plans for the development of our high school facilities.

The substantial and continuing population increases due to immigration coupled with the increase in the birth-rate is making it extremely difficult to maintain school standards. Every young person has a right to attend a school with an adequate physical plant. Acceptance of an inadequate school even for two, three or four years means that a large group of young people are forever denied that right.

The Board feels that it is their responsibility first to carefully analyze the needs and to plan the best reasonable answer to those needs. Then it is their duty to lay before the parents and taxpayers the full extent of the problem and the cost of its solution—to veil no facts, to resort to no subterfuge, but to completely inform our people. From that point on it is for the people to decide. If the voters of the district wish to see effected a practical plan for their high school, if they wish to provide a school plant in which our young people can be educated as the parents expect them to be educated they will take the action necessary to implement this plan. If they so act the Board will then feel that it is their primary duty to expend their funds with efficiency and economy in the provision of the educational opportunities to which every young American is entitled.